In the Appendix, Dr. Stilling presents a brief account of his experiments on the transplantation of the cornea. He found that if in the eye of a rabbit, an artificial pupil is made through the sclerotica, and immediately a portion of the cornea, cut from the eye of another rabbit, is accurately applied so as to cover the artificial pupil and retained in its place by a delicate suture, it will adhere without losing to any great extent its transparency. In one case, the transplanted cornea remained unchanged for six months. How far the transplanting of the cornea of a brute into the human eye will succeed, and what amount of advantage is to be derived from the operation, the facts detailed by our author are insufficient satisfactorily to prove. D. F. C.

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Art. XV. *Appréciation de la Doctrine Phrénologique ou des localisations des Facultés Intellectuelles et morales, au Moyen de l'Anatomie Comparée.* Par M. Jules Lafargue, ancien interne des hôpitaux.

*An appreciation of the Phrenological doctrine, or the localisation of the intellectual and moral faculties, by means of comparative anatomy.* By M. J. Lafargue.

The article, the title of which is given above, is contained in the *Archives Générales de Medicine* for March, April and June, 1838. It formed originally a part of the memoir addressed by M. Lafargue to the Society of Medicine of Bordeaux, in reply to the prize question proposed by that body—"To determine by argument, by comparative and pathological anatomy, and by physiological experiments, what is positive in regard to the localization of the functions of the Brain?"

The author has attacked the doctrine in all its details. He has attempted to show by an examination of the heads of the various vertebrated animals, and a comparison of their respective forms and dimensions, that the localization of the functions of the brain, or to speak more accurately, the localization of the phrenological organs as taught by the advocates of that doctrine, is altogether untrue. And really, if we are to receive the statements of M. Lafargue as established facts, and admit the validity of his deductions, the article before us can be viewed in no other light than as a complete and satisfactory refutation of the doctrine of phrenology.

The accuracy or inaccuracy of the author's alleged facts, and of his leading inferences, can only be established by a careful examination and comparison of the skulls of the different classes of animals. By cautiously noticing the peculiarity of conformation of the head in the individuals of each class or species, and comparing this with their known habits and disposition, we shall very speedily discover whether the views of M. Lafargue, or the Doctrines of Phrenology have their foundation in nature.

According to M. Lafargue, Phrenology cannot be true, Because—

1*st*. In certain classes of animals, the pachydermata for example, the form of the brain cannot be determined by that of the external skull.

2*dly*. In the mammalia, the form of the cranium and of the brain is altogether dependent upon the mechanical organization of the skeleton, especially in reference to the mode of station, progression, and mastication of the animals.

3*dly*. The development of the occipital crest is in exact proportion with the height of the animal, and the weight of the face—that of the interparietal is in direct proportion to the strength of the jaws, and in inverse proportion to that of the brain.

4*thly*. Hence, in all the individuals of different groups or species of animals, the conformation of the cranium is the same; thus animals whose habits and dispositions are precisely similar, differ in the conformation of their heads, from the difference in their attitudes and mode of mastication, while those whose habits and dispositions are dissimilar, resemble each other in the form of their skulls and brain, because their attitude and mode of mastication are alike.

5*thly*. Whenever any one portion of the brain is more or less developed, there will be found a proportionate greater or less development of every other portion of the organ.

The following extract from that section of M. Lafargue's Memoir which treats "On the Relation between the form of the Cranium and the moral habits," will enable our readers to judge of his manner of treating the subject he has undertaken to investigate—

"The mouse and the rat, having the head broadest posteriorly, should, according to the phrenologists, experience to a greater extent than the other mammalia, friendship and love of habitation. If it is difficult to prove the falsity of this assertion, from our imperfect acquaintance with the disposition of the mouse and rat, yet is it possible to sustain it otherwise than by a hypothesis? But the form of the cranium and of the brain in these animals, is explained by a fact less obscure than their moral habits—namely, by their mode of station which is evident to every eye.

"All the glires or gnawing animals have not, however, a conical head; thus the rabbit and hare have one shorter, and in some degree more globular—it is broader from one temple to the other, and resembles more in every respect that of certain of the carnivora. Hence, those animals ought to exhibit courage and ferocity, while every one knows that they are mild and timid. Who does not know, on the contrary, that certain individuals of the rat-kind, the form of whose craniums indicates the possession of the benevolent affections, devastate the dove-cotes by destroying the young birds? Who is not aware of the ferocity of the field-mouse and hamster? Even distrusting the exaggerated reports of certain German naturalists, we do not hesitate to believe in the warlike and sanguinary disposition of the last-mentioned animal, the temporal region of whose skull is, nevertheless, very much depressed."

"The cranium of the beaver is distinguished by its breadth from one temple to another and its depression in other parts, so that the destructive organs should have in this animal a considerable development, and yet who has ever pretended that the beaver was a sanguinary animal?"

"Buffon does not describe it as a sanguinary animal, but he affirms that it cuts or saws, in some manner, with its incisor teeth, the largest and most resistant branches of trees, which implies a great power of mastication. In the beaver, the inferior jaw being, in fact, as strong and broad at its basis as in carniverous animals of a similar height, the bitemporal diameter of the cranium should necessarily have the same extent.

"If the cranium of the beaver contradicts the pretended seat of destructiveness, it gives a formal contradiction likewise to the localizers of the faculty of constructiveness, in as much as the depression of the external portion of the frontal bone is in contrast, in this animal, with the projection of the temporal region; and yet, the beaver is distinguished by habits of industry as the carnivora are by their ferocity. As well for the constructive as for the sanguinary habits, there is required a powerful instrument, a broad and strong jaw. Hence to favour the constructive as well as the destructive instinct, the temporal regions enlarge and allow thus for the articulation of the inferior jaw and for the insertion of the temporal muscles."

"In regard to the carnivora, we have already remarked that the cranium of the polecat and weasel is broad behind, and narrow towards the temples; now will any one ever pretend that these animals are very much given to the sentiment of friendship? The domestic ferret never attaches itself to its master, whom it bites whenever it has an opportunity; hence all sportsmen handle it with caution. No one will pretend that the ferret is not sanguinary, and yet the flatness of the temples is in contrast with the breadth of the posterior part of its skull."

"The form of the cranium of the weasel and ferret, so opposed to phrenology, is very readily explained by the mechanism of their bodies, when we consider that these little animals having, as the mouse, short extremities, require to have the skull elongated, broad behind and narrow towards the temples. This explanation is the more firmly established by the fact, that certain of the carnivora analogous, in many respects, to the weasel and ferret, but having an attitude more elevated, approach, in the shape of the cranium, to the fox and greyhound, as the polecat, the marten, and the otter. In proportion as the animal is elevated from the ground, the head becomes shorter, and swells out in the sus-zygomatic region. The latter is more depressed in the ferret and weasel, than in the rabbit and the beaver; yet the first two, as ferocious as the tiger, destroy beyond their wants; but as they walk with the belly nearly touching the ground, it is requisite that their head should be broad behind, and narrow towards the temples. It is the same with certain of the rat kind of a very ferocious disposition, as the field-mouse and hamster. All these species have a lower jaw, of which the length makes up for its deficiency in breadth; so that notwithstanding its narrowness, in reference to the temples, it can easily articulate itself at the base of each of the zygomatic apophyses."

"In the carnivorous types, the details in regard to the form of the cranium, are explained by the attitude of the body as well as by the strength and breadth of the lower jaw. The lion, the wolf, and the cat are remarkable for the savageness of their disposition, of which the manifestations vary only in degree; but with these variations, let it be remarked, we do not observe a corresponding difference in the prominence of the temples compared with the other parts of the cranium; thus the shock-dog and the hyena have the same development of the organs of murder and of courage."

"In passing to the ruminating animals, we observe a class in which the form of the cranium, although very different from that of the carnivorous, is invariably explicable from the circumstrances relative to the mechanism of mastication. The wild or domestic animals of this class are, for the most part, mild, peaceable, and inoffensive; some, however, are more courageous and more ferocious than others, but without any corresponding difference in the form of their brain: as, for instance, the buffalo and bull. I have already said that the cranium of the camel (*camelus bactrianus*) does not resemble that of the other ruminating animals; it is distinguished from them, by the presence of an interparietal crest, and by the length of the bitemporal diameter; according to the doctrine of phrenology, it should, therefore, be more warlike and ferocious than the buffalo—whereas of all the ruminating species, it is the one that was the most easily domesticated, because it is naturally the most mild and docile."

"In the adult of the mammalia, the size of the cerebellum follows always that of the cerebrum, from which it results, that in all of these animals the generative impulse should have the same relative force."

"All birds have a large cerebellum, and the cock is not more favoured in this respect than the others.

"Among fish, in the silurus, which does not copulate more than the others, the cerebellum predominates over the rest of the brain."

We have room only for the general conclusions drawn by the author, from the facts and deductions set forth in the article before us:—

"1. In analogous species of animals, the form of the cranium, indicating the respective developments of the brain and face, measures their moral and intellectual perfection, and consequently their ferocity, which is in inverse proportion to this perfection—this results from a comparison of the tiger and spaniel. But among certain distant species, there are differences in the form of the cranium and brain, although the dispositions are the same, arising simply from a diversity in the mechanical construction of their bodies, either general or local, as may be observed by comparing the wolf and the weasel, the beaver and the cat, from whence it arises that the anatomy of the mammalia is opposed to the localization of the faculties.

"2. The form of the cranium in the different races of men, indicating the respective size of the brain and the face, measures the extent of intelligence as a whole. When two varieties of our species are distinguished, the one by the elevation of the faculties and of the higher sentiments, the other by the preponderance of the grosser propensities, the cranium is found to be uniformly large in the first, and uniformly contracted in the second. But the parietal vault, the frontal region, and zygomatico-mastoidien regions preserve the same relative proportions in both, from which it results that the anatomy of the human race is opposed to the localization of the faculties.

"3. The major part of the skulls of murderers, thieves, and poisoners, found in the collection of Gall, have not a form different from the medium conformation of the cranium of the white race, as we have demonstrated by an exact measurement. A small number present the form desired by the phrenologists; but as we have observed this form in individuals of the mildest disposition, with a broad face and small brain, we hence conclude that it is not peculiar to thieves, murderers, &c. From which it follows that the comparative cranioscopy of individuals of the same race is opposed to the localization of the faculties.

"It only remains for us to bring together our three means of refutation, in order to appreciate their respective value. Gall and his followers, perceiving how much their system would acquire strength by the sanction of analogy, have not neglected to interpret, in their favour, the form of the head of certain of the mammalia. Thus, when the alleged peculiarities of configuration in the head of a murderer do not produce entire conviction in the mind of a sceptic, they endeavour to attain their end by appealing to comparative anatomy; they insist upon the proportions, so remarkable, of the brain of the carnivora and the herbivora.

"We observe among men of the same race differences of intellect so trifling, that we might almost invariably attribute them to exterior influences, which the phrenologists do the more willingly, as the resemblance of the heads of the same type allow rarely any peculiarity of form explanatory of the peculiar character of the individuals to be seized upon. But, in examining each variety of the human race in general, we find, on the one hand, the native faculties delineated by striking features in the moral habits; on the other hand, a medium conformation of the head characterized as the distinct type; so that if there exist between the races moral and anatomical differences, they will both be equally decided and easy to appreciate; now all these differences do exist, but they do not correspond in such a manner as to justify the localization of the faculties."

We have presented the foregoing notice of the memoir of M. Lafargue, not because we are of opinion the author has succeeded in overthrowing the doctrine of phrenology, or that all the objections to its truth which he has brought forward cannot be readily and very satisfactorily met, but because we conceive that M. Lafargue has indicated the only possible mode in which the truth or falsity of phrenology can be established—the minute study of the conformation of the cranium and brain in all the various species of vertebrated animals, especially of the mammalia, and of the most striking differences observable upon an accurate comparison of them with each other; a cautious observation of the peculiar habits and dispositions by which each species or variety of animals is distinguished, and whether any peculiar conformation of brain is invariably connected with any predominant habit, disposition, or propensity. It is neither by the metaphysical arguments, nor by the misrepresentations or ridicule of the principles and tendency of the principles of phrenology, that have, heretofore, almost invariably been made use of in attacking it, that its overthrow can be accomplished—this can be done only so soon as it shall be proved to be in opposition to the facts based on the true anatomy and physiology of the animal frame.

D. F. C.